Space Weather Forecast

Issued on Monday, 08 November 2021 at 13:05 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: No significant activity.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar Activity rose over the past 24 hours, with increased X-ray activity late in the period largely the result of rapid development of a new sunspot group in the sun's northeastern quarter. This new spot group produced peak activity of occasional small-scale common-class X-ray flares, the largest of which was observed at 08/0751UTC. This group is one of three on the facing side of the sun at present, the others being magnetically simpler and stable or in decay, with no significant flares.

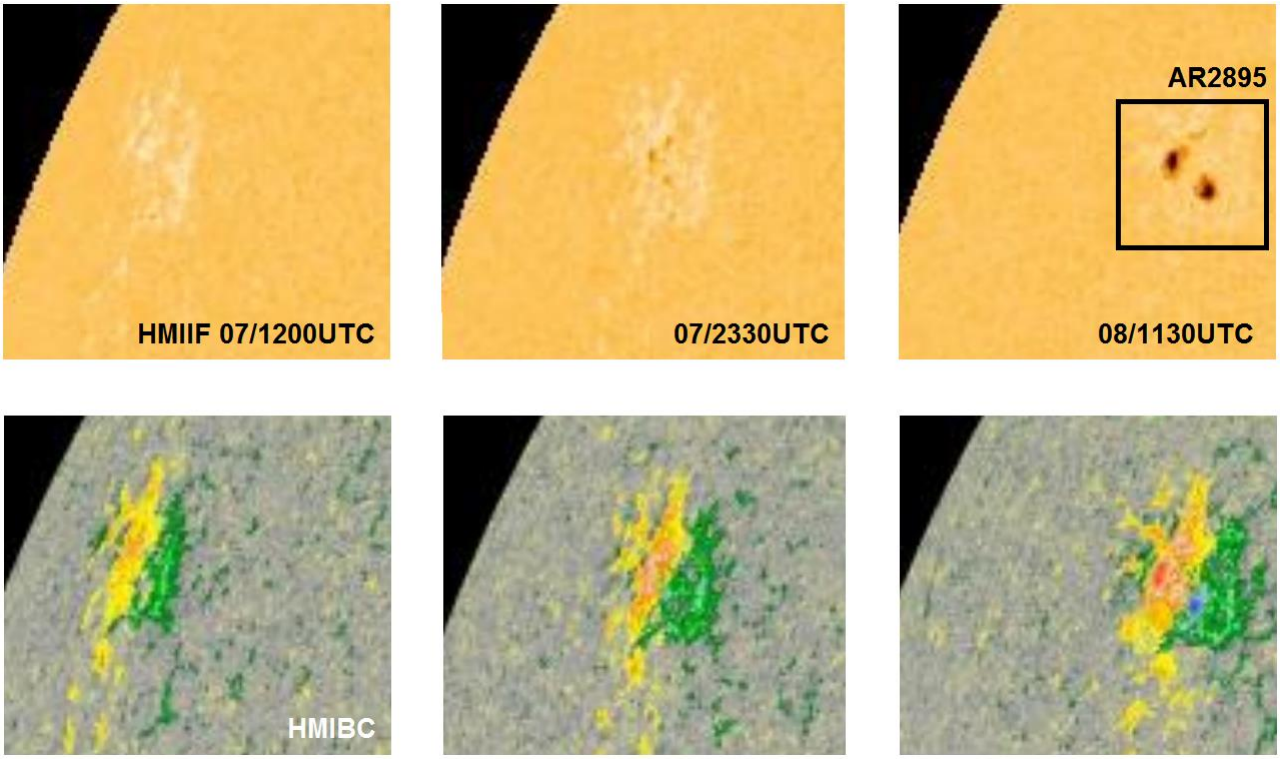

Figure 1: visible and magnetic solar imagery sequence of the emergence of a new sunspot group in the northeastern quarter of the sun. This growth culminated in small common-class flares later in the 24 hours.

Also of note was the fading from view of the sunspot group responsible for recent significant X-ray flares and geomagnetic activity (of last week), which became indistinct in the far northwest and will shortly leave the Earth-facing side of the sun. No Earth-directed Coronal Mass Ejections (CMEs) have been observed in available imagery.

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Solar Wind / Geomagnetic Activity: The solar wind speed saw a continued decline in the period, reaching background levels by the period's end. The number of particles comprising the solar wind and their associated magnetic field were both unremarkable, with the latter showing a mostly co-aligned bias with the Earth's field to further mute effects. The net result of the above solar wind measures was provisionally quiet geomagnetic indices throughout, near the bottom of the measurement scale throughout.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is likely to be low in the period, with common class flares likely (60% daily chance) and a now increased daily slight chance of moderate-class flares (10%) - largely the result of growth of the new sunspot in the northeast of the sun.

Solar Wind / Geomagnetic Activity: There are no definitively Earth-directed CMEs in the forecast period, although two CMEs passing ahead of the Earth late on day three, Wednesday 10 into Thursday 11 November, have a slight chance of bringing some glancing effects.

Otherwise, the current declining trend to ambient conditions in solar wind may reverse slightly on day one (Monday 08 November), the result of any fast wind from a 'coronal hole', although this is expected to be muted, with a resumption of the declining trend then expected by midweek at the latest.

Geomagnetic activity is forecast to be mostly quiet, with the greatest chance of any Minor Storm G1 intervals the result of the possible 'coronal hole' and any glancing incidence of the CMEs respectively.

Energetic Particles / Solar Radiation: No solar radiation storms are expected.

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	1	1	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

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Radio Blackouts - X Ray Flares:

X Ray Flares	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability			(%)	(%)	(%)	(%)
Active	R1-R2 M Class	No	10	10	10	10
Very Active	R3 to R5 X	No	1	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC)	Day 2 (00-24 UTC)	Day 3 (00-24 UTC)	Day 4 (00-24 UTC)
Probability (Exceedance)			(%)	(%)	(%)	(%)
Active	≥ S1	No	1	1	1	1
Very Active	≥ S3 *	No	1	1	1	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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